THE INVENTION CLAIMED IS:

1. A method for manufacturing a hard bias spin-dependent tunneling sensor comprising:

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forming a first lead;

forming a hard magnet over the first lead;

forming a free layer over the hard magnet;

forming a tunneling barrier layer over the free layer;

forming a first pinned layer over the tunneling barrier layer;

forming a nonmagnetic coupling layer over the first pinned layer;

forming a second pinned layer over the nonmagnetic coupling layer;

forming a pinning layer over the second pinned layer; and

forming a second lead over the pinning layer.

2. The method as claimed in claim 1 including:

forming a first gap spacer over the first lead; and

forming a second gap spacer over the pinning layer whereby the free layer is equidistant from the first and second leads.

3. The method as claimed in claim 1 wherein:

forming the first gap spacer uses a bilayer process; and

forming the hard magnet includes forming the hard magnet around the first gap spacer.

4. The method as claimed in claim 1 wherein:

forming the first lead includes using a bilayer process in forming a recess therein;

forming the hard magnet includes forming a seed layer in the recess of the first lead; and

forming the hard magnet includes forming a hard biasing material over the seed layer.

5. The method as claimed in claim 1 wherein:

forming the free layer, the tunneling barrier layer, the first pinned layer, the nonmagnetic coupling layer, and the pinning layer includes using a bilayer process;

and including:

forming an insulator over the hard magnet and around the free layer, the tunneling barrier layer, the first pinned layer, the nonmagnetic coupling layer, the second pinned layer and the pinning layer.

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6. A method for manufacturing a hard bias spin-dependent tunneling sensor comprising:

providing a substrate;

forming over the substrate, a shield/first lead of a conductive material;

forming over the shield/first lead, a hard magnet containing a material selected from a group consisting of cobalt, chrome, platinum, tantalum, and a combination thereof;

forming over the hard magnet, a free layer containing a material selected from a group consisting of cobalt, iron, nickel, and a combination thereof;

forming over the free layer, a tunneling barrier layer containing a material selected from a group consisting of aluminum, chromium, an oxide, a nitride, and a combination thereof;

forming over the tunneling barrier layer, a first pinned layer containing a material selected from a group consisting of cobalt, iron, nickel, and a combination thereof;

forming over the first pinned layer, a nonmagnetic coupling layer containing ruthenium;

forming over the nonmagnetic coupling layer, a second pinned layer containing a material selected from a group consisting of cobalt, iron, nickel, and a combination thereof;

forming over the second pinned layer, a pinning layer containing a material selected from a group consisting of platinum, palladium, manganese, iron, nickel, iridium, an oxide, and a combination thereof; and

forming over the pinning layer, a shield/second lead of a conductive material.

7. The method as claimed in claim 6 including:

forming over the shield/first lead, a first gap spacer from a nonmagnetic and conductive material; and

forming over the pinning layer, a second gap spacer from a nonmagnetic and conductive material whereby the free layer is equally spaced from the shield/first lead and the shield/second lead.

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8. The method as claimed in claim 6 wherein:

forming the first gap spacer uses a bilayer process; and

forming the hard magnet includes forming the hard magnet around the first gap spacer.

9. The method as claimed in claim 6 wherein:

forming the shield/first lead includes using a bilayer process in forming a recess therein;

forming the hard magnet includes forming a seed layer in the recess of the shield/first lead;

forming the hard magnet includes forming a hard biasing material over the seed layer; and

forming the free layer forms the free layer in contact with the hard magnet.

10. The method as claimed in claim 6 wherein:

forming the free layer, the tunneling barrier layer, the first pinned layer, the nonmagnetic coupling layer, and the pinning layer includes using a bilayer process;

and including:

forming an insulator over the hard magnet and around the free layer, the tunneling barrier layer, the first pinned layer, the nonmagnetic coupling layer, the second pinned layer and the pinning layer.

11. A hard bias spin-dependent tunneling sensor comprising:

a first lead;

a hard magnet over the first lead;

a free layer over the hard magnet;

a tunneling barrier layer over the free layer;

a first pinned layer over the tunneling barrier layer;

a nonmagnetic coupling layer over the first pinned layer;

a second pinned layer over the nonmagnetic coupling layer;

a pinning layer over the second pinned layer; and

a second lead over the pinning layer.

12. The sensor as claimed in claim 11 including:

a first gap spacer over the first lead; and

a second gap spacer over the pinning layer whereby the free layer is equally spaced from the first and second leads.

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13. The sensor as claimed in claim 11 wherein:
the hard magnet is formed around and in contact with the first gap spacer.

14. The sensor as claimed in claim 11 wherein:
the first lead has a recess provided therein;
a seed layer in the recess of the first lead; and
the hard magnet is formed over the seed layer.

15. The sensor as claimed in claim 11 including:
an insulator over the hard magnet and around the free layer, the tunneling barrier layer, the first pinned layer, the nonmagnetic coupling layer, the second pinned layer, and the pinning layer.

16. A hard bias spin-dependent tunneling sensor comprising:
a substrate;
a shield/first lead of a conductive material over the substrate;
a hard magnet containing a material selected from a group consisting of cobalt, chrome, platinum, tantalum, and a combination thereof over the shield/first lead;
a free layer containing a material selected from a group consisting of cobalt, iron, nickel, and a combination thereof over the hard magnet;
a tunneling barrier layer containing a material selected from a group consisting of aluminum, chromium, an oxide, a nitride, and a combination thereof over the free layer;
a first pinned layer containing a material selected from a group consisting of cobalt, iron, nickel, and a combination thereof over the tunneling barrier layer;
a nonmagnetic coupling layer containing ruthenium over the first pinned layer;
a second pinned layer containing a material selected from a group consisting of cobalt, iron, nickel, and a combination thereof over the nonmagnetic coupling layer;
a pinning layer containing a material selected from a group consisting of platinum, palladium, manganese, iron, nickel, iridium, an oxide, and a combination thereof over the second pinned layer; and

a shield/second lead of a conductive material over the pinning layer.

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17. The sensor as claimed in claim 16 including:

a first gap spacer of a nonmagnetic, hard, conductive material over the shield/first lead; and

a second gap spacer of a nonmagnetic, hard, and conductive material whereby the free layer is equidistant from the shield/first lead and the shield/second lead.

18. The sensor as claimed in claim 16 wherein:

the hard magnet is formed around and in contact with the first gap spacer.

19. The sensor as claimed in claim 16 wherein:

the shield/first lead has a recess provided therein;

and including:

a seed layer in the recess;

and wherein:

the hard magnet is formed over the seed layer; and

the free layer is formed in contact with the hard magnet.

20. The sensor as claimed in claim 16 including:

an insulator over the hard magnet and around the free layer, the tunneling barrier layer, the first pinned layer, the nonmagnetic coupling layer, the second pinned layer and the pinning layer.